

WHAT IS CLAIMED IS:

1. An isolated subpopulation of bone marrow cells which are CD45⁻, Lin⁻, and Sca⁺ and which are capable of differentiating into insulin-producing pancreatic islet cells.

2. The isolated subpopulation of bone marrow cells which is human.

3. A cell isolated from the subpopulation of bone marrow cells of claim 1 which is capable of differentiating into an insulin-producing pancreatic islet cell.

4. A composition comprising the isolated subpopulation of bone marrow cells of claim 1 and a pharmaceutically-acceptable carrier, excipient, diluent or auxiliary agent.

5. A method for treating a diabetic condition in a mammal, comprising administering to the mammal a therapeutically effective amount of bone marrow, or an effective subpopulation thereof in accordance with claim 1.

6. A method in accordance with claim 5, wherein the mammal is a human.

7. A method in accordance with claim 5, wherein the diabetic condition is type I diabetes.

8. A method in accordance with claim 5, wherein the diabetic condition is type II diabetes.

9. A method in accordance with claim 5, wherein the diabetic condition is a form of secondary diabetes selected from the group consisting of pancreatic diabetes, extrapancreatic/endocrine diabetes, drug-induced diabetes, lipoatropic diabetes, myotonic dystrophy-associated diabetes and diabetes induced by disturbance of insulin receptors.

10. A method in accordance with claim 5, wherein the bone marrow is autologous.

11. A method in accordance with claim 5, wherein the bone marrow is non-autologous.

12. A method in accordance with claim 11, wherein the non-autologous bone marrow is syngeneic or allogeneic bone marrow.

13. A method in accordance with claim 5, wherein said effective subpopulation comprises a cellular composition consisting of greater than 20% bone marrow cells which are depleted of hematopoietic cells and matured leukocytes, wherein said bone marrow cells have a phenotype of CD45⁻, Lin⁻, and Sca⁺, as determined by RT-PCR, antibody staining and flow cytometry.

14. A method in accordance with claim 5, wherein said bone marrow, or effective subpopulation thereof is administered in combination with purified recombinant granulocyte colony-stimulating factor (G-CSF) or granulocyte macrophage-colony stimulating factor (GM-CSF) in an amount effective to stimulate mobilization of cells from bone marrow and differentiation into pancreatic islet cells.

15. A method for stimulating the mobilization and differentiation of bone marrow derived cells into pancreatic islet cells, comprising treating bone marrow-derived cells with an effective stimulating amount of G-CSF and/or GM-CSF.